Problem Worksheet for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ date \_\_\_\_\_\_\_

* **If you start from rest (dropped) the initial velocity is 0**
* **(I used 10 m/s2 instead of 9.8 m/s2 on some below)**
* ***To convert km/hr to m/s; divide # by 3.6***
* **To convert m/s to km/hr you multiply by 3.6**

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| **#** | **Image** | **Given/ Want** | **Formula** | **Formula filled in** | **Answer w/unit** |
| 1 a | Dropped  If it is falling- use g (9.8 s2)  g = gravity  6 sec  hits | T = 6 sec  g = 9.8 m/s2  vi = 0  Vf= X =how fast ? | Vf = vi + at | Vf = 0 + (9.8 m/s2) (6 sec)  (motion in 1 direction only) | = 59 m/s |
| 1b | ABOVE  Need height = distance | T = 6 sec  g = 9.8 m/s2  vi = 0  Vf= 59 m/s  D = | D = vi t + ½ at2 | D= 0 (6sec)+1/2 ( 10m/s2 (6sec)  = 0 + 5 m/s2 (6sec) | 180 m  Or  1.8 X 102 m |
| 2 | Vi = 4.2 m/s (up)  Fall time 2.5 sec  Height?  Falling (down-) negative gravity | Vi = 4.2 m/s (up)  T = 2.5 sec  G = 10 m/s2  Height = D = ? (x) | D = vi t + ½ at2 | D = 4.2 m/s (2.5 s) + ½ -10m/s2 (2.5s)  (notice 2 motions)  Vi is positive up and requires us to recognize that gravity is negative when in opposite direction | (-20 meters) |
| 3 | 8.3 min  Distance??  V = 3.00 X 108 m/s | T = 8.3 min  V = 3.00 X 108 m/s  D = ? | V = d/t  Or  D = vt | Convert min to sec  8.3 min = 498 sec = 5.0 X 102 s  So  D = 5.0 X 102 s (3.00 X 108 m/s) | 1.5 X 10 11 m |
| 4 | C:\Program Files\Microsoft Office\MEDIA\CAGCAT10\j0212957.wmf55 km/hr Distance to stop in meters?  0.75 s stop | V= 55 km/h  Or V = 15.2 m/s  (see work)  T - .75 s  D = ? in meters | D = vt  Or  ***To convert***  ***km/hr = m/s***  ***divide # by 3.6*** | Convert km to m  55 km/hr X 1000 m = 55 000 m/hr  1 km  Then convert hours to sec  55 000 m/hr X 1 hr = 15.2 m/s  3600 s  Now d = 15.2 m/s ( 0.75 sec) | D = 11 m  Why?  Can only use 2 digits that are significant  (0.75 sec) |
| 5 a  b. | 125 m  80 m  125 m  80 m | 8 |  | 1. 80 + 125 = 2. 80 -125 = 3. Distance walked either way equals🡪 | 1. 205 m 2. -45 m 3. 205 m |
| 6 | 0.30 s  gun  100 m | D = 100 m  T = 0.30 s  V? | V = d/t | V = 100 m/.30 s | =330 m/s |
| 7 | 720.0 m/s  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 324 m\_ | D = 324 m  V = 720 m/s   1. T? 2. V in km/hr | 1. T= d/v   m/s X 3.6 = km/hr | 1. 324 m/720.0 m/s 2. 720 m/s X 3.6 = | 1. 0.450s 2. 2592 km/hr |
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